

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
29 April 2004 (29.04.2004)

PCT

(10) International Publication Number
WO 2004/036229 A2

(51) International Patent Classification⁷:

G01R

(81) Designated States (national): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, EG, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(21) International Application Number:

PCT/IL2003/000826

(22) International Filing Date: 12 October 2003 (12.10.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/418,707 17 October 2002 (17.10.2002) US
60/437,452 2 January 2003 (02.01.2003) US

(71) Applicant (for all designated States except US): RAMOT AT TEL AVIV UNIVERSITY LTD. [IL/IL]; 32 Haim Levanon Street, 69 975 Tel Aviv (IL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): NEUFELD, Arnon [IL/IL]; 20 Harugey Malcot Street, 69 714 Tel Aviv (IL). LEVIN, Menahem [IL/IL]; 77 Herzl Street, 52 421 Ramat Gan (IL). NAVON, Gil [IL/IL]; 24 HaMeiri Street, 52 651 Ramat Gan (IL).

(74) Agent: G. E. EHRLICH (1995) LTD.; 11 Menachem Begin Street, 52 521 Ramat Gan (IL).

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2004/036229 A2

(54) Title: A RADIOFREQUENCY MAGNETIC FIELD RESONATOR AND A METHOD OF DESIGNING THE SAME

(57) Abstract: A radiofrequency (RF) resonator for magnetic resonance analysis, the RF resonator comprising: (a) at least two conductive elements, each having a first curvature along a direction perpendicular to a longitudinal axis, the at least two conductive elements being spaced along the longitudinal axis, so that when an RF current flows within the at least two conductive elements in a direction of the longitudinal axis, a substantially homogenous RF magnetic field, directed perpendicular to the longitudinal axis, is produced in a volume defined between the at least two conductive elements. The RF resonator further comprises (b) an electronic circuitry designed and configured for providing predetermined resonance characteristics of the RF resonator, for matching an impedance of the RF resonator to an impedance of an RF transmitter electrically communicating with the electronic circuitry, and for balancing the RF magnetic field to have a substantially symmetrical profile with respect to a transverse axis being perpendicular to the longitudinal axis.